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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/583,374

06/19/2006

Masaki Yamauchi

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EXAMINER

HAN, KWANG S

ART UNIT

PAPER NUMBER

1795

MAIL DATE

DELIVERY MODE

06/23/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/583,374	Applicant(s) YAMAUCHI ET AL.	
	Examiner Kwang Han	Art Unit 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 June 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>6/19/06, 4/10/08</u> . | 6) <input type="checkbox"/> Other: ____. |

**MEMBRANE ELECTRODE ASSEMBLY, METHOD FOR PRODUCING THE SAME
AND POLYMER ELECTROLYTE FUEL CELL**

Examiner: K. Han SN: 10/583,374 Art Unit: 1795 June 23, 2009

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

2. The information disclosure statement filed April 10, 2008 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each cited foreign patent document; each non-patent literature publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but the information referred to therein has not been considered. The english translation of the Chinese office action (CN 2005800091226) has not been submitted.

Specification

3. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining

obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. Claim 1-4, 6, and 8-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshida et al. (WO 03/081700, using US 2005/0142430 for translation and citation).

Regarding claims 1-3, 6, 8, 9, and 10, Yoshida is directed towards a method of forming and apparatus of a membrane electrode assembly comprising a hydrogen ion conductive polymer electrolyte membrane, a pair of catalyst layers arranged on both surfaces of the polymer electrolyte membrane, and a pair of gas diffusion layers [0017] (Figure 1). Yoshida discloses that the carbon cloth for the gas diffusion layer is woven and the distance between intersections of the warp and weft thread affecting the thickness of the fabric formed [0048] but is silent towards the relationship of the thickness of a center portion to the peripheral portion. Yoshida further discloses that the cloth is effectively formed by forming fiber bundles which further affect the cloth thickness which in turn affects the reactant gas flow along the grooves of the separator [0045] teaching the thickness of the gas diffusion layer to be a result effective variable.

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It would have been obvious to one of ordinary skill in the art at the time of the invention to vary the thickness of the gas diffusion layer since it has been held that discovering the optimum ranges for a result effective variable such as gas diffusion layer thickness involves only routine skill in the art in the absence of showing of criticality in the claimed range (MPEP 2144.05) In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Regarding claim 4, Yoshida discloses the cell stack to be pressed between two flat press-platens [0080].

Regarding claim 11, Yoshida is directed towards a method of producing a membrane electrode assembly comprising a hydrogen ion conductive polymer electrolyte membrane, a pair of catalyst layers arranged on both surfaces of the polymer electrolyte membrane, and a pair of gas diffusion layers [0017] (Figure 1) which are pressed between two flat press-platens [0080]. Yoshida discloses that the carbon cloth for the gas diffusion layer is woven and the distance between intersections of the warp and weft thread affecting the thickness of the fabric formed [0048] but is silent towards the relationship of the thickness of a center portion to the peripheral portion. Yoshida further discloses that the cloth thickness for the gas diffusion layer affects the reactant gas flow along the grooves of the separator [0045] teaching the thickness of the gas diffusion layer to be a result effective variable. It would have been obvious to one of ordinary skill in the art at the time of the invention to vary the thickness of the gas diffusion layer since it has been held that discovering the optimum ranges for a result effective variable such as gas diffusion layer thickness involves only routine skill in the

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art in the absence of showing of criticality in the claimed range (MPEP 2144.05) In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

7. Claims 5 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshida et al. as applied to claim 1 above, and further in view of Hampden-Smith et al. (US 2005/0233203).

The teaching of Yoshida as discussed above are herein incorporated.

Regarding claims 5 and 7, Yoshida discloses the use of water repellent layers with varying thicknesses but is silent towards having different concentrations of the water repellent.

Hampden-Smith teaches a gas diffusion layer incorporating modified carbon products [Abstract] with varying concentrations of hydrophobicity [0254] to enhance the mass transport properties [0035]. It would have been obvious to one of ordinary skill in the art to vary the concentration of the water repellent between the central and peripheral portions of the gas diffusion layer because Hampden-Smith teaches variation in the concentration allows for enhancement in mass transport properties of the carbon material.

8. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshida et al. in view of Hampden-Smith et al.

Regarding claim 12, Yoshida is directed towards a method for forming a membrane electrode assembly comprising a hydrogen ion conductive polymer

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electrolyte membrane, a pair of catalyst layers arranged on both surfaces of the polymer electrolyte membrane, and a pair of gas diffusion layers [0017] (Figure 1). Yoshida discloses that the carbon cloth for the gas diffusion layer is woven and the distance between intersections of the warp and weft thread affecting the thickness of the fabric formed [0048] but is silent towards the relationship of the thickness of a center portion to the peripheral portion. Yoshida further discloses that the cloth is effectively formed by forming fiber bundles which further affect the cloth thickness which in turn affects the reactant gas flow along the grooves of the separator [0045] teaching the thickness of the gas diffusion layer to be a result effective variable. It would have been obvious to one of ordinary skill in the art at the time of the invention to vary the thickness of the gas diffusion layer since it has been held that discovering the optimum ranges for a result effective variable such as gas diffusion layer thickness involves only routine skill in the art in the absence of showing of criticality in the claimed range (MPEP 2144.05) In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). Yoshida further discloses the use of water repellent layers with varying thicknesses but is silent towards having different concentrations of the water repellent.

Hampden-Smith teaches a gas diffusion layer incorporating modified carbon products [Abstract] with varying concentrations of hydrophobicity [0254] to enhance the mass transport properties [0035]. It would have been obvious to one of ordinary skill in the art to vary the concentration of the water repellent between the central and peripheral portions of the gas diffusion layer because Hampden-Smith teaches variation

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in the concentration allows for enhancement in mass transport properties of the carbon material.

Contact/Correspondence Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kwang Han whose telephone number is (571) 270-5264. The examiner can normally be reached on Monday through Friday 8:00am to 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dah-Wei Yuan can be reached on (571) 272-1295. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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/K. H./

Examiner, Art Unit 1795

/Dah-Wei D. Yuan/

Supervisory Patent Examiner, Art Unit 1795